

NASA TECH BRIEF



NASA Tech Briefs are issued to summarize specific innovations derived from the U. S. space program and to encourage their commercial application. Copies are available to the public from the Clearinghouse for Federal Scientific and Technical Information, Springfield, Virginia 22151.

Combustion Chamber Inlet Manifold Separates Vapor from Liquid

The problem:

To have the vapor constituent of a pressurized cryogenic propellant enter a rocket combustion chamber before the liquid constituent.

The solution:

A circular manifold with tangential orifices at the inner circumference from which the relatively lighter vapor, separated from the liquid as the result of centrifugal action, flows ahead of the liquid into the combustion chamber. As the propellant flows around the circular manifold, the much heavier liquid component is centrifugally forced to the outer circumference of the manifold, while the lighter vapor is confined to an inner path. The manifold and the combustion chamber orifices are so positioned that the separated vapor will precede the liquid into the chamber.

Notes:

1. With modifications, this device can be used in the food, petrochemical, and pharmaceutical industries to effect a separation between liquid and vapor, or between two immiscible liquids.

2. Implementation of this concept in a device for separating liquid from gaseous nitrogen is described in NASA Tech Brief B63-10251, June 1964. As of date of publication of this Tech Brief neither a model nor a prototype has been constructed. Inquiries may also be directed to:

Technology Utilization Officer
Marshall Space Flight Center
Huntsville, Alabama, 35812
Reference: B66-10052

Patent status:

No patent action is contemplated by NASA.

Source: Dwight I. Baker
of North American Aviation, Inc.,
under contract to
Marshall Space Flight Center
(M-FS-531)

Category 05